that it cannot give the slightest clue to the size of the heart, as will be apparent when the conditions of its mechanism are understood. Place two books on the table with their edges touching, and listening with the stethoscope over one, tap with a finger over the other: a dull knock is heard. Tapping over the farther book, and gradually approaching the nearer one, the same dull knock is heard until the nearer book is percussed, when a sharp click reaches the ear. This gives the *rationale* of the method, and on this point I think all other observers have been mistaken. It is not an ordinary percussion note which is heard, but the knock of direct contact, and the quality of the percussion sound is of no importance. In applying the method to physical examination, the stethoscope is to be placed over a part of an organ in direct contact with the body wall, the position of which is known, and percussion is applied over some distant part, gradually approaching the stethoscope, until the sharp click is heard. Then one knows that the stethoscope and the percussing finger are over the same organ, and by percussing in different directions, the outline of the organ over which the stethoscope is placed is defined.

But there are certain limitations to this conclusion, and overlooking these has led to the errors to which I have alluded. Suppose that it be desired to define the outline of the stomach—say in a case of gastric dilatation. If the whole of the stomach be in contact with the abdominal wall, the defined outline will be correct. But if the transverse colon lie over the stomach, then the outline will be that of the line of junction of the colon with the stomach, and the portion of stomach which lies under the colon will be overlooked. This is the error which is made in regard to the heart, for if the stethoscope be placed over the small exposed portion of the heart, and percussion be practised towards this spot, no change of sound will be heard until the percussing finger reaches again the exposed portion of the heart, that portion of the heart which lies under the lung giving no response. We define only the line of contact of exposed heart and neighbouring lung, or what is called the superficial cardiac dulness, which has as its only value the determination of a small amount of emphysema. But, returning to the examination of the abdomen, the method will define the exact outline of distended large intestine, a matter which may be of importance to the surgeon before operating for intestinal obstruction. The physician can by this method define the outlines of the various lobes of the lungs and the direction of their separating fissures. This is of great importance in deciding the locality and the spread of a phthisical lesion. A tuberculous lesion beginning in the middle lobe of the right lung is generally much more serious than one in other parts, and the spread of phthisis to the middle lobe indicates a late stage of the disease, whatever may be the condition of the lesion in other parts. A common method for the spreading of tuberculosis in the lung is by insufflation of sputum from one upper lobe into the upper bronchi of the opposite lower lobe and the localisation of the results of the latter accident guides the prognosis. Incipient phthisis of the apex of the lung can only be diagnosed with certainty by combining the results of all methods of examination, and slight shrinking of the apex is an important sign. This can be determined at the back of the chest by comparing the heights of the two apices. By percussion this is possible, but only to a highly-trained observer with a very delicate ear, while by auscultatory percussion it is easy to anyone. By the same method the upper line of a pleural effusion is determined without difficulty, just as by palpation as described above. For these reasons auscultatory percussion should not be allowed to pass into disuse.

It is stated that the produce of chestnuts in France amounts to 300,000 tons annually. The chestnut is a valuable food, containing as it does a large amount of fat, and nearly as much albuminoids as cereals, but it is much neglected in this country.

EXPERIMENTS made by M. Fonville in Paris appear to indicate that under all conditions of weather pneumatic tyres on a macadamised road give traction results never less than 10 per cent., and sometimes as much as 35 per cent., better than iron tyres.

THE TREATMENT OF SYPHILIS IN THE ARMY BY INTRAMUSCULAR INJECTIONS OF MERCURY.

BY SURGEON-MAJOR F. J. LAMBKIN, A.M.S.,

SUCCESS OF THE METHOD IN INDIA.

THE Army Medical Report for the year 1891 contained a paper by me advocating the treatment of syphilis in the army by intramuscular injections of mercury, and expressing a hope that the treatment be given a trial by army medical officers. This trial has been given to it, more especially in India, with favourable results. In the last two Army Medical Reports the Surgeon-General with Her Majesty's Forces says that the treatment has been generally successful in that country, not only in the actual treatment of the disease itself, but also in lessening the admissions into hospital for syphilis—that is to say, the admission-rate, high as it was, would have been still higher but for the treatment of the disease by the intramuscular method.

The chief advantages which I claimed in the paper referred to were:

1. That by the intramuscular method the soldier can be treated whilst out of hospital at his duty for that length of time during which it is absolutely necessary he should be with any hope of curing the disease. This is nearly impossible with other modes of giving mercury.
2. That the treatment is absolutely in the surgeon's own hands, and he knows for a certainty whether the patient gets his treatment or not.
3. That mercury given hypodermically does not produce diarrhoea and indigestion, which it so often does when given internally.
4. By this mode of treating syphilis the State becomes a distinct gainer, in that the time actually spent in hospital by the syphilitic soldier is much lessened, whilst the chances of his readmission for the same is reduced to a minimum.

RESULTS.

As far as my own practice is concerned, during the six years which have elapsed since the publication of the above paper, the intramuscular method has given me the very best results, in not only getting rid of the primary symptoms in a wonderfully short time, but also in preventing further outbreaks of the disease, and in some cases, when I was able to observe for a lengthened period, probably curing the patient completely.

The soldier, on first getting syphilis, is kept under treatment in hospital only as long as any of the more active primary or secondary signs of the disease exist; when these disappear he is discharged to his duty, and ordered to attend hospital on one day a week for an injection. In the army there is no difficulty in seeing that the men attend regularly, and they are taken away from their duty for not more than a few minutes a week.

THE PREPARATION TO BE USED.

The preparation of mercury which I recommended for injection was as follows: Hydrarg. ʒj; lanolin. pur. ʒij; ol. carbol. (2 per cent.) ʒj. Maximum dose 10 ℥. for an injection. At first I used a solution of perchloride (gr. $\frac{1}{2}$ to 20 ℥.), as also of sal alembroth, but was obliged to give them up, principally on account of the pain which followed at the site of injection, and also because in one case a large abscess formed after an injection of the perchloride solution. To within the last six months I continued to use nothing but the mercurial cream above described, and with it I have given over 6,000 injections, not one of which has been followed by abscess. In some slight induration remained at the site of injection for a few days; the operation itself was practically painless, and only in a small number did any pain occur afterwards. I can truly say that not one soldier who has been injected by me has been incapacitated (through the injection or its results) from doing his duty. I have always been sensible of the fact that the mercurial cream possesses very great drawbacks, for it requires a certain amount of care in compounding and dexterity in injecting. In cold weather it becomes semi-solid, whilst in hot the reverse occurs, so

that the metal is no longer suspended. These defects can of course be remedied. I have used the preparation in mid-winter in England and in the plains of Jamaica with the greatest success, but at the same time a certain amount of trouble is required, which is sure to militate against the preparation being generally used.

While serving in Jamaica I tried a solution of sozoiodol of mercury. It was supplied to me in tablets, but I did not meet with the same success as when using the mercurial cream. Since coming home, and during the last six months, I have given the sozoiodol of mercury a further trial, and have used the following solution: Sodii iodidi, gr. 10; hydrarg. sozoiodol, gr. 5; aquæ distillate, 200 m.; 10 to 15 m. as an injection. This solution is made up in the hospital dispensary, and I have met with much more success than when I used the tablets. I find that (1) at the time of, and for some time after, the injection more pain is caused by the sozoiodol solution; but this soon passes away, leaving no ill result. (2) It does not seem to me to have quite so rapid an effect on the disease as the cream; still, bearing in mind that it possesses none of the disadvantages of the latter, I have no hesitation in recommending it for general use in the army.

GENERAL TREATMENT.

Whatever solution of mercury is used, the following has been my mode of carrying out the treatment: When in hospital, patients undergoing the treatment are kept on a liberal diet and generally allowed a bottle of stout or beer a day. They are allowed up and advised to be as much as possible in the open air, and also to wash their teeth after each meal. Should there be any signs of the gums becoming spongy, they are given a strong mouth wash of alum and acetate of lead to use frequently.

Patients in hospital usually receive one injection weekly of 10 m. of either of the above solutions, but there can be no definite rule as to the number or amount of the injections, and the surgeon must use his own judgment. One of the great advantages of giving mercury hypodermically is that we can gauge the amount given in that way far better than when administered by any of the other methods, so that the number of injections and amount given ought to be varied to suit circumstances.

METHOD OF INJECTION.

The site of injection is almost invariably the gluteal region. The needle is dipped in a 1 in 20 solution of carbolic acid, and is then pushed with a rotatory motion into the muscle as far as it will go. The syringe which I use is made of vulcanite. The one originally supplied to me by Messrs. Krohne and Seesemann, of London, in 1890, I still use, and it is as good as ever. The needles are about 1 inch in length; I have used longer, but found no advantage in so doing. Platino-iridium needles penetrate better, and do not bend or rust. One accident liable to happen to these needles is that they very often split at the side, and care must be taken to examine them.

CASES TREATED.

The cases of syphilis, numbering some hundreds, which have been treated by me by the intramuscular injections of mercury have represented the disease in every form, both primary and secondary: the former from the hard papule without any abrasion to the phagedænic sore rapidly destroying tissue; the latter from the secondary effects of syphilis, as represented by general glandular enlargements with cachexia accompanied by one of the milder rashes, to cases covered with rupial sores (these also destroying tissue), and others presenting symptoms of grave internal lesions.

Although I have before me the notes of all the above cases with the exception of two, I do not intend alluding to them in this paper further than to remark that the intramuscular treatment was a marked success all round, being just as successful among the negro soldiers as with the white.

The majority of these cases I was able to observe thoroughly. Most of them were kept under treatment for from five to six months, and others for much longer. They all, without exception, derived the greatest benefit from it. The average number of days in hospital was twenty days. The average time under treatment, but doing duty, was five months. Some of these cases I saw two years later, after all treatment had been suspended; they had had no return of the disease,

but were in the best of health, and all glandular enlargements had disappeared. It is, of course, impossible to be certain, but I truly believe that these men were cured of syphilis.

I will mention two of the above cases:

Private P. was a patient in hospital in Newcastle, Jamaica, suffering from secondary syphilis. He was in a fearful state. There was a phagedænic sore on the penis, two-thirds of the glans of which it had eaten away; he was covered with rupial ulcers from head to foot, totally confined to bed, cachectic, and so emaciated that he was a mere skeleton. Every known treatment had been tried, and mercury given in every way except by the intramuscular method, but the patient went from bad to worse, until his condition was considered to be most precarious. On October 4th, 1893, by order of the senior medical officer, the patient was handed over to me for treatment, and on that day I have him as a first injection 10 m. of the mercurial cream. As this case has already been fully reported, it will suffice here to state, that from the above date the patient began to improve in a marvellous manner, and that he, who was in a moribund condition when handed over to me was, five weeks later, having had six injections, out and about. Subsequently he was kept under treatment for months, and eventually went to the Reserve apparently quite restored in health.

I would here mention that from this and other cases which I have had I have learnt the important fact that mercury can be given safely and with the greatest success in cases of syphilis accompanied by phagedæna. This is contrary to the teachings of the late Dr. Carmichael, of Dublin, who emphatically condemned it in such cases. Personally, I have seen cases like this go from bad to worse when given mercury internally.

Another case which seems to me to be of particular interest is the following: At Jamaica, Corporal B. complained of feeling languid, having headaches, losing flesh, and being quite unable to continue at his duty. He said he had been ailing ever since his arrival in the West Indies early in 1894. He looked very anæmic and debilitated. Thinking his state of health was simply the result of climatic changes, I ordered him tonics, etc. He did not improve, but in fact got, if anything, worse. On closer examination I found inguinal and cervical glandular enlargements, and learnt that in 1892 he had had syphilis—a sore on the penis—followed by a slight sore throat and a roseolar rash. He had been treated at the time in hospital for a month, and was then discharged to duty. Since then he had had no further treatment, as he did not report sick, although suffering now and then from sore throat and ulcers in the mouth, which were probably specific. On obtaining this information I concluded that his present debilitated condition was due to the syphilitic poison. All internal remedies were stopped, and injections of mercury given. From the first injection he began to look better, and one month later when he had had five injections he had gained 12 lbs. in weight, and looked a different man. He continued to attend to receive an injection once a week for five months; at the end of this time he was apparently quite well. A year after I saw this man, and he had had no return of the disease, but was in the best of health.

This case is especially interesting, and an illustration of what happens with the early discontinuance of specific treatment. The syphilitic patient goes into hospital, is there treated until all active signs of the disease have passed away; there may have been an indurated chancre and one of the milder rashes; these vanish in perhaps a month's time; then he is discharged, and all treatment, of course, stopped. Should the patient be of robust physique, temperate in his habits, and the general surroundings and climate healthy, the disease may not trouble him again during his life. If, on the contrary, the physique be not of the very best, and he proceed to the tropics, during the first hot weather his general health falls below par, then the disease lays hold of him. This is what happened in the case just related. One cannot help thinking how many similar cases go undetected, until the disease declares itself, either by some fearful external ravages, or by still worse internal lesions. Treatment is then too late, and the man is either invalided out of the service or dies.

THE LENGTH OF THE TREATMENT REQUIRED.

The above state of affairs will go on as long as the older methods of treating syphilis remain. We must recognise the fact that with any hope of curing syphilis (and that it can be cured is now, I think, an accepted fact), treatment must be continued for months after all signs of the disease have disappeared.

Now, in the case of the soldier, is it to be expected that he be kept in hospital over all this long period? And is it possible to treat him whilst out of hospital by any of the older methods? I maintain that it is not; still to bring about his cure this is what is absolutely necessary.

The introduction of the intramuscular mode of giving mercury gets over this difficulty, for by it the soldier can be treated just as well out of hospital as in, and for as long a period as one wishes, with absolutely no trouble to himself, the only loss to the service being that he is taken away

from his duty for half an hour each week. Who would suggest the treatment of the soldier whilst at his duty by one of the other methods—say the internal? Is there any possibility that it would be carried out regularly and systematically? In answer to this I would merely remark that it is hard enough to carry it out among the better-educated classes; how much harder would it be among soldiers?

I think the best indication as to continuing or interrupting the injections is the patient's weight. He ought to be weighed regularly, and if he gains weight or if it remains stationary and he appears to improve otherwise, continue the injections; if he does not appear to improve, and weight be lost, then the treatment ought to be interrupted for, say, a month, and then recommenced, when it will be found that weight will go up. I think that in the majority of cases, with interruptions, treatment ought if possible to extend over a period of from six to eight months.

The efforts of the medical profession to sustain measures to prevent the spread of the disease have long since been frustrated, and now that the Contagious Diseases Act has apparently been finally done away with and full sway given to syphilis to work its worst amongst our soldiers, its treatment becomes of more moment than ever. In the intramuscular method I believe we are in possession of a plan of treatment which increases our chances tenfold of not only alleviating but of curing the syphilitic soldier and rendering him fit to meet the many hardships of tropical service.

Finally, in the essay published in the Army Medical Report, 1891, I expressed a hope that medical officers would give the intramuscular treatment a trial. This they have done, at least in India, with most favourable results. Let me in this paper tell them that my reason for advocating so strongly this mode of treatment is not so much because mercury, given in this manner, is more beneficial in the treatment of syphilis than when administered by other methods (personally I think it is far superior) but that it is actually the only reasonable method by which the syphilitic soldier can be kept under treatment over that period which we know to be necessary to ensure his cure; and I would ask them, whatever solutions of mercury they prefer to use, to give this method a fair trial, and they will not be disappointed with their results. Moreover, I feel certain that, if the treatment becomes general, it will not be long before the admissions, invaliding, and death-rates of the army show a marked decrease.

OPERATION UPON THE GASSERIAN GANGLION BY THE HARTLEY-KRAUSE METHOD FOR FACIAL NEURALGIA: THREE YEARS AFTER.

By J. LYNN THOMAS, F.R.C.S.,
Assistant Surgeon to the Cardiff Infirmary.

HISTORY.

MRS. M., aged 61, was referred to me by Dr. J. D. Williams for advice in November, 1894, and after careful consideration we advised an intracranial operation upon the nerves affected. She was taken ill quite suddenly in 1887, with *tic douloureux* of the right supraorbital and infraorbital nerves; this attack lasted about five weeks, and one of her teeth was extracted. Two years later another violent attack came on suddenly, and attacked the infraorbital and inferior dental nerves, the supraorbital nerve escaping this time; she had six teeth extracted with no relief to her pain, and ever since she has not passed one day without a twinge of pain. The stabbing pain woke her up when sleeping at night or by day, occasionally it was so intense that she became delirious; the nerves affected were the right infraorbital, inferior dental, and the auriculo-temporal. She had three tender spots: the points of exit from their canals of the infraorbital and inferior dental nerves, and one near the angle of the mouth on the upper lip.

She had tried many drugs, the constant current battery, and change of air, with no relief. During the last twelve months life had been a misery, and her few hours of ease had been spent in dreading the onset of another attack; she had only drunk liquids, and these only on the left side of her

mouth; she could only open her mouth a short distance without bringing on a "terrible twinge" along the course of the inferior dental nerve. On this account she lived on liquids alone, and had lost a great deal of flesh. A slight draught of air, the sudden movement of her body or the slamming of a door brought on an attack along the course of the infraorbital, inferior dental, and auriculo-temporal nerves. The right half of her mouth was swollen, and the red portion of the lips dry and encrusted, owing to her fear of moistening them; the swollen condition was possibly due to trophic or vasomotor changes, but the volitional immobility of the whole right side of the face might perhaps have contributed to the existence of this condition.

She had not combed the right side of her head for a long time owing to tenderness and the fear of exciting a sensory spasm. There was almost complete analgesia over the distribution areas of the second and third divisions of the fifth nerve; sense of gentle touch was unimpaired, but hard touch was described as tenderness; sense of heat was less acute than on the left side; the condition of the tongue could not be tested for obvious reasons. She had had ten children, and had always led an active life. Her existence was one of utter misery, and she said her only hope of relief from pain was death.

I advised under the circumstances an intracranial operation in preference to multiple external operations, because I considered that the disfigurement would be much less by the first method, and the risk to life about the same in both; whilst the time required for, say, a Carnochan's operation and that for exposure of the Gasserian ganglion leaves but little room for choice.

OPERATION.

On December 17th, 1894, I exposed the middle fossa of the base of the skull by the Hartley-Krause method, and at once divided the superior maxillary nerve with ease, and then pushed the end out of sight into the foramen rotundum, its proximal end was eventually torn away from the partially divided Gasserian ganglion. I divided the Gasserian ganglion

Diagram showing (1) ophthalmic, (2) superior maxillary, (3) inferior maxillary, branches from the Gasserian ganglion. X the point where hæmorrhage took place.

until I saw the motor root of the inferior maxillary nerve lying underneath it, my intention being to save it. When I was cutting about halfway through the inferior maxillary nerve at the foramen ovale at the spot marked X in the diagram there was a sudden and rather alarming flooding of the field of operation with blood, which was stopped by plugging and removal of the brain retractors. Proceeding with the operation, I had to stop after tearing away the superior maxillary nerve owing to intermittency of the brain pulsation being noticed by Dr. J. D. Williams. The wound was drained for twenty-four hours and fourteen days later the patient left the private hospital with the wound healed up.

AFTER-HISTORY.

Within a month she had a few twinges of pain along the course of the inferior dental nerve from its exit at the mental foramen to the middle of the lower lip. She has had occasional recurrence of the pain along this nerve up until now (December, 1897), but for months at a time she has been quite free from any pain. There has been no recurrence of the pain along the second division of the trigeminal nerve nor along the course of the auriculo-temporal nerve.

I once saw her in an attack of pain along the inferior dental nerve, and I suggested reopening the scar to complete the operation originally intended, but she replied that "The pain is not so bad as that."